

REMARKS

The present Amendment amends claims 1-7 and adds new claims 8 and 9. Therefore, the present application has pending claims 1-9.

The Examiner objected to the specification as allegedly failing to provide proper antecedent basis for the claims subject matter. Particularly the Examiner alleges that the specification does not provide support for the physical storage device which comprises a logical storage device as recited in claim 1. Amendments were made to claim 1 to more clearly describe the features of the present invention as described in the specification. Thus, claim 1 now recites the features as disclosed in the specification. Therefore, reconsideration and withdrawal of this objection is respectfully requested.

The drawings stand objected to as allegedly failing to show every feature of the invention as specified in the claims. Amendments were made to the claims so that the features now recited in the claims are set forth in the drawings. Thus, the drawings now show every feature of the invention as specified in the claims. Therefore, reconsideration and withdrawal of this objection is respectfully requested.

Claims 1-4 and 7 stand rejected under 35 USC §103(a) as being unpatentable over Takagi (U.S. Patent No. 5,440,708) in view of Kemkar (U.S. Patent No. 6,883,083) and further in view of Burkes (U.S. Patent No. 5,651,133); and claims 5 and 6 stand rejected under 35 USC §103(a) as being unpatentable over Takagi, Kemkar and Burkes and further in view of Lubbers (U.S. Patent Application Publication No. 2005/0262298). This rejection is traversed for the following reasons. Applicants submit that the features of the present invention as now more clearly recited in claims 1-7 are

not taught or suggested by Takagi, Kemkar, Burkes or Lubbers whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw these rejections.

Amendments were made to the claims to more clearly describe features of the present invention as recited in the claims. Particularly, amendments were made to the claims to recite that the present invention is directed to a storage control sub-system of a storage control system connected to a host terminal including a plurality of physical storage devices, a plurality of logical storage devices prepared in accordance with said plurality of physical storage devices, a virtual storage unit configured from a plurality of virtual storage regions and implemented in said storage control sub-system by establishing a virtual storage capacity value, a memory for storing said established virtual storage capacity value, and a storage control section for receiving a write request from said host terminal.

According to the present invention a pool configured from one or more first logical storage devices of the plurality of logical storage devices exists, the logical storage devices from which the pool is configured being configured from two or more logical storage regions.

Further, according to the present invention the storage control section, which is configured in such a way that when said write request is received a an association is created between an unassigned logical storage region of the plurality of logical storage regions of the pool and the virtual storage region of the virtual storage unit as specified by the write request and data is written in accordance with the write request in the assigned logical storage region,

reports the virtual storage capacity value stored in the memory to the host terminal, and ensures that the reported virtual storage capacity value is not changed while the reported virtual storage capacity value is being stored in the host terminal.

Still further according to the present invention provides a virtual storage unit serving as a storage unit to which logical storage regions are dynamically assigned and ensures the storage capacity value of the virtual storage unit does not change once it has been reported to the host.

The above described features of the present invention now more clearly recited in the claims are not taught or suggested by any of the references of record whether taken individually or in combination with each other. Particularly, the above described features of the present invention now more clearly recited in the claims are not taught or suggested by Takagi, Kemkar, Burkes or Lubbers whether taken individually or in combination with each other as suggested by the Examiner.

Takagi teaches that a physical space management table is disposed outside the microprocessor in order to hold attribute data of the regions of the physical space held as a set of a plurality of regions in a manner corresponding to the regions of the physical space. As per Takagi the microprocessor is provided with a physical space management unit which fetches the attribute data from the physical space management table and manages them. The physical space management unit includes a physical space management table search control circuit, and a physical data buffer which primarily holds the attribute data obtained by the physical space

management table search control circuit and the physical address in a manner corresponded to each other.

Kemkar describes a conventional apparatus that describes the association between the volume recognized by the host, the volume of the storage interior and the disk. However, there is no teaching or suggestion in Kemkar of the volume recognized by the host and the dynamic assigning of the logical storage regions as in the present invention.

In the Office Action the Examiner addition, the Examiner Alleges that the reporting of the virtual storage capacity value stored in said memory to said host terminal, and ensuring that the reported virtual storage capacity value is not changed while the reported virtual storage capacity value is being stored in the host terminal as recited in claim 1 is easily conceived on the basis of the disclosure of col. 15, lines 10 to 25 of Burkes. However, what is disclosed in Burkes is that a capacity depletion warning is issued when a certain threshold has been exceeded which is entirely different from the features of the present invention as recited in the claims.

Lubbers is relied upon by the Examiner for an alleged teaching of a system which provides a data logging mechanism for storing commands and associated data for I/O transaction that occur when the remote storage device unavailable. However, this teaching of Lubbers is not equivalent to the recognition of the volume by the host and the dynamic assigning of the logical storage regions as in the present invention.

Thus, Takagi, Kemkar, Burkes or Lubbers each fails to teach or suggest a pool configured from one or more first logical storage devices of the plurality of logical storage devices exists, the logical storage devices from

which the pool is configured being configured from two or more logical storage regions as recited in the claims.

Further, Takagi, Kemkar, Burkes or Lubbers each fails to teach or suggest that the storage control section, which is configured in such a way that when said write request is received a an association is created between an unassigned logical storage region of the plurality of logical storage regions of the pool and the virtual storage region of the virtual storage unit as specified by the write request and data is written in accordance with the write request in the assigned logical storage region, reports the virtual storage capacity value stored in the memory to the host terminal, and ensures that the reported virtual storage capacity value is not changed while the reported virtual storage capacity value is being stored in the host terminal as recited in the claims.

Still further, Takagi, Kemkar, Burkes or Lubbers each fails to teach or suggest that a virtual storage unit serving as a storage unit to which logical storage regions are dynamically assigned and ensures the storage capacity value of the virtual storage unit does not change once it has been reported to the host as recited in the claims.

Therefore, Takagi, Kemkar, Burkes or Lubbers each fails to teach or suggest the features of the present invention as now more clearly recited in the claims. Accordingly, reconsideration and withdrawal of the 35 USC §103(a) rejection of claims 1-4 and 7 as being unpatentable over Takagi in view of Kemkar and Burkes, and reconsideration and withdrawal of the 35 USC §103(a) rejection of claims 5 and 6 as being unpatentable over Takagi, Kemkar and Burkes and Lubbers is respectfully requested.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1-7.

As indicated above, the present Amendment adds new claims 8 and 9. New claims 8 and 9 each depend from claim 1. Therefore, the same arguments present above with respect to claim 1 would apply as well to claims 8 and 9.

In view of the foregoing amendments and remarks, applicants submit that claims 1-9 are in condition for allowance. Accordingly, early allowance of claims 1-9 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417 (1309.43767X00).

Respectfully submitted,

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